

The Inter-university Scientific Conference on
Electrical Measuring Instruments and on the Technical
Means of Automation

SOV/119-59-3-15/15

accurate automatic quotient-type meters in digital computations.
R. R. Kharchenko: Methods of determining the dynamic errors
of a magnetic oscilloscope by simulation. P. P. Ornatskiy:
Problems in measuring electric quantities at extremely low
frequencies by electrical indicating instruments of various
systems. L. F. Kulikovskiy: Novel types of a. c. compensators.
A. S. Rzenkrants: Automatic bridges and a. c. compensators
suited for the control of the parameters of condensers in
series production. L. I. Stolov: Some characteristics of
midget induction motors which can be used in measuring
technique and automation. D. A. Borodayev: Ultrasonic
pressure- and liquid level gages. Yu. A. Skripnik: The
circuitry of a phase-sensitive commutation indicator for
a. c. semi-equilibrium bridges. N. F. Suvid: The application
of instruments with magnetic bridges, which permit a
considerable simplification of the design of the apparatus
and the circuitry used in the measurement of non-electric
quantities. V. A. Ferents: Method of increasing the
sensitivity of oxygen gas analyzers. P. V. Novitskiy:

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The Inter-university Scientific Conference on
Electrical Measuring Instruments and on the Technical
Means of Automation

SOV/119-59-3-13/15

Design of apparatus for measuring vibration quantities.
V. V. Pasynkov: Main types of non-linear semiconductor
resistors and possibilities of their application to
circuitry in automation and measuring technique. G. N.
Novopashenny: Development of measuring amplifiers with
semiconductor triodes. Ya. V. Novosel'tsev, N. A. Smirnov,
Ye. Ye. Afanase'yev, Ye. P. Uglyumov: Precision semiconductor
frequency meter operating according to the pulse-counting
principle. P. G. Nikitin and A. Bezukladnikov: Methods of
measuring the magnetic field strength by means of bismuth
resistors and transducers operating on the Hall effect
principle. A resolution was adopted by the closing plenary
meeting of the Conference, which indicates ways of
improving and coordinating scientific research work in the
field of automation, electric measuring- and computing
technique.

Card 5/5

SOV/146-2-4-17/19

AUTHOR: Shumilovskiy, N.N., Doctor of Technical Sciences,
Professor, Mel'ttser, L.V., Candidate of Technical
Sciences

TITLE: Basic Construction Methods of Measuring Systems
for Radioactive Instruments? Automatically Controlling
the Composition of a Substance.

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroy-
eniye, 1959, Nr 4, pp 137-148 (USSR)

ABSTRACT: This is a report read at an inter-vuz conference on
electromeasuring instruments and technical means of
automation, on November 12, 1958. It deals with the
construction of systems automatically controlling
the composition of a substance by means of radio-
active isotope radiation. The control of binary
mixtures by means of radiation damping or diffusion
is considered. A simple damping system of gamma ✓

Card 1/3

SOV/146-2-4-17/19

Basic Construction Methods of Measuring Systems for Radioactive Instruments Automatically Controlling the Composition of a Substance

flow. Quick-acting and simple spectrometers must be designed and computation techniques used to carry out combined measurements. This article was recommended by the Organization Committee of the inter-vuz conference on electro-measuring instruments and technical means of automation. There are 4 diagrams, 1 graph, and 6 Soviet references.

ASSOCIATION: Moskovskiy energeticheskiy institut (The Moscow Power Institute), Institut avtomatiki i telemekhaniki AN SSSR (The Institute of Automation and Telemechanics AS USSR). ✓

SUBMITTED: February 14, 1959.

Card 3/3

SHUMILOVSKIY, N.N., doktor tekhn.nauk; MEL'TTSER, L.V., kand.tekhn.
nauk

Selecting optimum conditions for a receiver in units of automatic control of gas consumption by means of the method of tagged molecules. Izv.vys.ucheb.zav.; prib. no.6:109-113
(MIRA 12:12)
'59.

1. Moskovskiy energeticheskiy institut.
(Gas meters) (Radioisotopes--Industrial applications)

S T U M L V S K I Y N N
 report to be presented at the 1st Int'l Congress of the Intl. Federation of Automatic Control, 25 Jun-5 Jul 1950, Moscow, USSR.

- LETKIN, A. Ya. - "On application of a self-adjusting system of automatic control" A. M., and ALEXEYEV, V. A. - "Industrial telemetres, V. S., PERE TUMIKH, A. N., and digital technique" MEFANOV, M. V. - "Some peculiarities of the structure of multi-channel regulation systems" increasing the quality of measurement systems is increasing the problem of establishing routines in automatic regulation systems" K. A. - "Principles of construction of digital double code automatic computers" I. L. - "Concerning the relation of systems of automatic regulation with periodic movements" MIRKOV, Yu. S. - "Systems of automatic control" KIRILOV, N. S., and KRIVENKO, V. I. - "System of automatic control on the use of cutting of rolled metal on a continuous bar mill with the use of digital calculating machines" OZHAREV, V. M. - "Some principles of organizing systems of complex automation of large scale chemical production and optimization of these systems" OZEROV, G. M. - "Systems of automatic regulation with interaction" OZEROV, V. P. - "Statistical synthesis of impulse systems" PEROV, V. P. - "Invariant principle and its application in the calculation of linear and nonlinear systems" PEROV, B. N. - "The invariant function in the technique of automatic control" PEROV, V. D. - "The problem of autonomy in the technique of automatic control" PEROV, V. P. - "Some problems of synthesis of optimum systems with nonlinear systems" PUCHKOV, V. S. - "Method of determining the parameters of the linear relation of the observed function with the parameters of the linear, calculation of the theory of autonomy in the technique of automatic control" PUSKALO, V. P., PEROV, V. V., KOROLEV, R. V., and VOLODIN, I. Z. - "Principles of construction of a single class of extra control" PUSKALO, V. P., PEROV, V. V., PEROV, V. V., KOROLEV, R. V., and VOLODIN, I. Z. - "Principles of construction of relay devices" ROJINSKI, V. N. - "The development of the theory of relay devices in the USSR" ROZENBLAT, M. A. - "Dynamic characteristics of cores with high magnetic permeability and their influence on magnetic boosters" ROZOV, L. I. - "Varied methods of investigating the quality of automatic control systems" RUMYANTSEV, V. M. - "Dynamics of automatic regulation of boiler-turbine units" SEDOV, N. N., KHLITSHEN, L. V., SAKHON, A. A., KHLITSHEN, L. V., and POLOVINSKY, A. A. - "Automatic control of composition of multi-ingrediant mixtures with the aid of calculating machine facilities" SHAGOVSKII, E. S., and SOKOLIN, V. G. - "Some results of work for the utilization of radioactive radiation for automatic control of mining enterprises and their use for solution of variation problems in machinery" SOKOLOV, V. T., BATOV, A. N., DABREIN, V. M., VYDREV, N. S., and FEDOROV, L. V. - "Analysis and synthesis of automatic power supply" SOKOLOV, V. T., and POLOVINSKY, A. A. - "Apparatus for technical control of production with the use of nuclear radiation" SPANOV, R. I., VYSHNEV, L. N., and SOKOLIN, V. G. - "Methods of organizing the trajectory of route of linear systems and qualitative determination of type of trajectory" TVERCHIK, Ye. Z. - "Elements of the theory of digital automatic systems" TVERCHIK, Ye. Z., KASHIN, V. A., CHUDIL, Yu. I., and SAVITSKY, G. A. - VENCHOVSKI, D. B. - "Stability of telemeasurment" VENCHOVSKI, D. B. - "Methods of mathematical modeling and calculations" VENCHOVSKI, V. A. - "Interactions of calculating loads in electrical systems" technology experiment in calculating loads in electrical systems"

MALOV, Vladimir Sergeyevich; ZHUKHOVITSKIY, B.Ya., red.; ANTIK, I.V., red.;
VESHENEVSKIY, S.N., red.; KULEBAKIN, V.S., red.; SMIRNOV, A.D.,
red.; SOTSKOV, B.S., red.; STEPANI, Ye.P., red.; SHUMILOVSKIY, N.N.,
red.; VORONICH, K.P., tekhn.red.

[Remote control] Telemekhanika. Moskva, Gos.energ.izd-vo, 1960.
93 p. (Biblioteka po avtomatike, no.13) (MIRA 14:3)

(Remote control)

IL'IN, Viktor Aleksandrovich; KUZNETSOV, N.A., red.; ANTIK, I.V., red.;
VESHENEVSKIY, S.I., red.; KULEBAKIN, V.S., red.; SMIRNOV, A.D.,
red.; SOTSKOV, B.S., red.; STEFANI, Ye.P., red.; SHUMILOVSKIY,
N.N., red.; LARIONOV, G.Ye., tekhn.red.

[Remote-control systems for widely-separated objects] Sistemy
telemekhaniki dlia rassredotochennykh ob"ektov. Moskva, Gos.
energ.izd-vo, 1960. 110 p. (Biblioteka po avtomatike, no.15).
(MIRA 14:3)

(Remote control)

LOSSIYEVSKIY, Vladimir Leonidovich; PLISKIN, Leyb Gavrilovich; SHUMI-
LOVSKIY, N.N., prof., doktor tekhn.nauk, otv.red.; KOTOV, V.A.,
red.izd-va; SIMKINA, G.S., tekhn.red.

[Automatic control of continuous industrial processes] Voprosy
avtomatizatsii nepreryvnykh proizvodstvennykh protsessov. Moskva,
Izd-vo Akad.nauk SSSR, 1960. 111 p. (MIRA 13:7)
(Automatic control)

VOLOSNIKOV, Vladimir Petrovich; SIROTIN, A.A., kand.tekhn.nauk, red.;
ANTIK, I.V., red.; VESHENEVSKIY, S.I., red.; KULEBAКIN, V.S.,
red.; SMIRNOV, A.D., red.; SOTSKOV, V.S., red.; STEFANI, Ye.P.,
red.; SHUMILOVSKIY, N.N., red.; BORUNOV, H.I., tekhn.red.

[Use of computers for automating electric drives] Ispol'zovanie
vychislitel'nykh mashin dlia avtomatizatsii elektroprivodov.
Moskva, Gos.energ.izd-vo, 1960. 119 p. (Biblioteka po avtomatike,
no.17). (MIRA 14:3)

(Automatic control) (Electronic calculating machines)
(Electric driving)

BONDARENKO, Prokofiy Stepanovich; BYCHKOV, V.P., red.; ANTIK, I.V., red.;
VESHENAEVSKIY, S.P., red.; KULEBAKIN, V.S., red.; SMIRNOV, A.D.,
red.; SOTSKOV, B.S., red.; STEFANI, Ye.P., red.; SHUMILOVSKIY,
N.H., red.; BYCHKOV, V.P., red.; VORONIN, K.P., tekhn.red.

[Automatic control of blast-furnace processes by means of
computers] Avtomatizatsiya protsessov domennogo proizvodstva
s primeneniem schetno-rezhiushchikh ustroistv. Moskva, Gos.
energ.izd-vo, 1960. 143 p. (Biblioteka po avtomatike, no.20)
(MIRA 14:3)

(Blast furnaces)

(Automation)

VOROB'YEVA, Tamara Mikhaylovna; ANTIK, I.V., red.; VESHENEVSKIY, S.N.,
red.; KULEBAКIN, V.S., red.; SMIRNOV, A.D., red.; SOTSKOV,
B.S., red.; STEFANI, Ye.P., red.; SHUMILOVSKIY, N.H., red.;
KUZNETSOV, N.A., red.; LARIONOV, G.Ye., tekhn. red.

[Electromagnetic clutches] Elektromagnitnye myfty. Moskva,
Gos. energ. izd-vo, 1960. 206 p. (Biblioteka po avtomatike,
no.18) (MIRA 14:5)

1. Chlen korrespondent AN SSSR (for Sotkov)
(Clutches (Machinery)) (Electric controllers)

BYKOV, Mikhail Aleksandrovich; GRATSIANSKIY, Igor' Nikolayevich; KIFER,
Isaak Iosifovich; KUTYASHOVA, Yelena Mikhaylovna; LEVIN, Mark
Iosifovich; PRYTKOV, Vladimir Tikhonovich; STREKALOV, Ivan
Alekseyevich; TALITSKIY, Aleksandr Vasil'yevich; KHARCHENKO,
Roman Romanovich; SHUMILOVSKIY, Nikolay Nikolayevich; KASATKIN,
A.S., red.: VORONIN, K.P., tekhn.red.

[Course on electric measurements] Kurs elektricheskikh izmerenii.
Pod red. V.T.Prytkova i A.V.Talitskogo. Moskva, Gos.energ.izd-vo.
(MIRA 13:10)
Pt.1. 1960. 479 p. Pt.2. 1960. 430 p.
(Electric measurements)

PLEASE BOOK EXPEDITION

807/4597

Mashino-tekhnicheskoye obshchestvo prirodozashchitnoy promyshlennosti
Imperatorskaya tekhnika (Instrument Manufacture and
Measurement Technique) Moscow, Nashiz, 1950. 462 p. Errata slip inserted.
5,000 copies printed.

Ed.: A.M. Gavrilov, Doctor of Technical Sciences, Professor; Tech. Ed.:

A.Ya. Tikhonov; Managing Ed.: N.V. Polkovskiy, Engineer.
Construction (Nashiz); N.V. Polkovskiy, Engineer.

PURPOSE: This collection of articles is intended for scientific and technical
personnel in the instrument industry.

CONTENTS: The 23 articles deal with the present state
and the outlook for the
development of instrument manufacture and measurement technique. New problems
of design, construction, and manufacture of instruments are discussed in the first
two sections. Emphasis is given to problems of automation and mechanization of
production and to the application of new techniques in process control, ultra-
sonic, and chipless working of metals. The third section deals with new
measurement methods involving the use of ultrasonic and radio isotopes. Some
theoretical aspects of metrology and measurement technique are also discussed.
In this section, no personalities are mentioned. References accompany several
of the articles.

Belyaev, A.P., Candidate of Technical Sciences. Automation and
Mechanization of Manufacturing Processes in the Production of
Variable Wiper-and-Resistor

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PROBLEMS OF METROLOGY AND MEASUREMENT TECHNIQUE

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| Shmelevskiy, N.F., Doctor of Technical Sciences, Professor, and
I.V. Miltsev, Candidate of Technical Sciences. Use of Nuclear
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| Sivchenko, I.A., Candidate of Technical Sciences. Present State
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Instruments for Checking Dimensions | 337 |
| Sorokin, I.I., Doctor of Technical Sciences, Professor. Modern
Methods of Vibration Measurement | 346 |
| Durantsev, A.I., Engineer. Oscillographic Methods of Frequency
Measurement | 359 |
| Sokol'skiy, L.O., Engineer. Dynamic Method for Determining the Moduli
of Elasticity Under High-Temperature Conditions | 369 |
| Krasnou-Ponomaryov, I.M., Candidate of Technical Sciences. Metrological
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AVAILABILITY: Library of Congress

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Card 6/6

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S/024/60/000/01/004/028
E032/E31⁴

(Moscow)

16,9500

AUTHORS:

Mel'tiser, L.V. and Shumilovskiy

TITLE:

Scientific Foundations of Automatic Methods of Control¹⁴
Using Nuclear Radiations¹⁴

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Energetika i avtomatika, 1960, Nr 1, pp 33-42 (USSR)

ABSTRACT:

This paper is a report presented by Professor N.N. Shumilovskiy to a meeting of the Technical Section of the Ac.Sc., USSR, on September 29, 1959. According to the data published by the Institut ekonomiki AN SSSR (Institute of Economics of the Ac.Sc., USSR) the use of instruments employing radioactive materials in the control and automation of industrial processes led to a saving of about five hundred million roubles in 1958, while it was estimated that a wider application of radioactive isotopes would lead to a saving of already developed typical applications of radioactive isotopes. Among the examples considered are the measurement of the thickness or density of a material by measuring the absorption of radiation, ionisation liquid and gas-flow meters, automatic

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Scientific Foundations of Automatic Methods of Control Using Nuclear
Radiations

and continuous control of the composition of complex mixtures and so on. Statistical effects associated with the statistical nature of radioactive disintegrations are considered, as well as measures which can be taken in order to compensate for fluctuations in the detection efficiency. It is recommended that further developments in this field should be concerned with a) the control of the composition of complex substances and mixtures, b) automatic defectorscopy and c) methods based on the use of controlled neutron sources. It is suggested that the Academy of Sciences of the USSR should organise a special laboratory which would be concerned with scientific problems in this field. An interesting solution is given to the problem of the control of the composition of complex mixtures. If the medium under consideration is irradiated with beta particles, then one can observe secondary characteristic radiation and Bremsstrahlung. The spectrum of the *✓*

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Scientific Foundations of Automatic Methods of Control Using Nuclear
Radiations

characteristic emission is a line spectrum and depends only on the atomic number Z of the element. The energy E corresponding to the different lines in this spectrum is given by Moseley's law, which yields the following expression for the electron energy levels in an atom:

$$E \approx Rhc \frac{(Z - k_{scr})^2}{n^2} \quad (29)$$

where R is Rydberg's constant,
 h is Planck's constant,
 c is the velocity of light,
 k_{scr} is the screening constant and
 n is an integer.

The Bremsstrahlung is emitted owing to the interaction ✓

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Scientific Foundations of Automatic Methods of Control Using Nuclear
Radiations

between the incident fast electrons and the coulomb field of the atomic nuclei and forms a continuous spectrum with a well-defined maximum. The energy corresponding to the maximum is given by the empirical relation:

$$E = k_E (\rho d)^{0.2Z^{0.7}} \quad (30)$$

where k_E is a coefficient which depends on the energy of the incident particles,

ρ is the density and

d is the thickness of the controlled substance.

The problem thus reduces to the separation of the various spectral lines characteristic of the given element. This is done with the aid of a special spectrometric device which measures the intensity of these lines and gives the relative concentration. Another possible method involves the use of neutrons. In this method nuclear reactions such

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Scientific Foundations of Automatic Methods of Control Using Nuclear
Radiations

as (n, α) and (n, γ) , which are accompanied by the capture of the neutrons and the emission of alpha particles and gamma rays, may be employed. The intensity of the radiation emitted on irradiation depends on the effective capture cross-section for the particular nuclear reaction and the number of atoms of the element taking part in the reaction.

There are 9 figures and 6 Soviet references.

SUBMITTED: November 14, 1959

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Card 5/5

AUTHORS:

Shumilovskiy, N. N., Doctor of
Technical Sciences, Mel'ttaer, L. V.,
Candidate of Technical Sciences

S/030/60/000/03/006/044
B015/B008

TITLE:

Development of Automatic Control Methods by the Utilization of Nuclear Radiation

PERIODICALS

Development of Automatic
Nuclear Radiation
Vestnik Akademii nauk SSSR, 1960, Nr 3, pp 42-46 (USSR)

TITLE: Nuclear Radiation
PERIODICAL: Vestnik Akademii nauk SSSR, 1960, Nr 3, pp 42-45
TEXT: The authors report on the spreading of these control methods in Soviet industry. The scientists O. N. Vavilov, I. M. Frank and B. I. Verkhovskiy of the Akademiya nauk SSSR (Academy of Sciences USSR) and V. A. Yanushkovskiy of the Akademiya nauk Latvianskoy SSR (Academy of Sciences of the Latvian SSR) participated in the elaboration of the fundamentals of these methods. Radioactive devices of special effect were designed at the institut Avtomatiki i telemekhaniki (Institute of Automation and Telemechanics) and the institut Gornogo dela (Institute of Mining). Differential- and compensation schemes are used in order to reduce apparatus errors. The compensation scheme with a radiation receiver is shown in figure 1 and the measuring diagram according to the control signal method in figure 2. The measuring diagram according to the dynamic compensation method is shown in figure 3. Comparatively simple devices in the

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Card 1/2

SHUMILOVSKIY, N.N.; MEL'TTSER, L.V.; KALMAKOV, A.A.

Possibility of using secondary radiation occurring in a controlled atmosphere under the effect of beta particles to analyze the composition of nonferrous ore dressing products. Izv. vys. ucheb. zav.; tsvet. met. 3 no. 6:34-41 '60. (MIRA 14:1)

1. Institut avtomatiki i telemekhaniki AN SSSR. Krasnoyarskiy institut tsvetnykh metallov. Rekomendovana kafedroy obogashcheniya poleznykh iskopayemykh Krasnoyarskogo instituta tsvetnykh metallov. (Ore dressing) (Beta rays--Industrial applications)

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B007/B00816.9500
AUTHORS:

Shumilovskiy, N.N., Professor, Doctor of Technical Sciences,
Gol'dfarb, L.S. Professor, Doctor of Technical Sciences,
Babakov, N.A., Professor, Doctor of Technical Sciences,
Goryainov, O.A., Docent, Candidate of Technical Sciences,
Naumov, B.N., Docent, Candidate of Technical Sciences

TITLE:

Ya.Z. Tsypkin. Teoriya impul'snykh sistem (Theory of Impulse Systems).
724 Pages, Price 23 Rubles 25 Kopecks. Gosudarstvennoye izdatel'stvo
fiziko-matematicheskoy literatury (State Publishing House of
Physics and Mathematical Literature), 1959

PERIODICAL: Elektrичество, 1960, No. 5, pp. 94-95

TEXT: This is a book review. The book belongs to those fundamental monographs
which determine new trends in science and establish new scientific doctrines.
The book contains the research results of the author in the field of the theory
of impulse systems. Since 1948 the author has been dealing with the problems
raised by the theory of intermittent control. He expanded this theory later and

Card 1/3

Ya.Z. Taypkin. Teoriya impul'snykh sistem (Theory of Impulse Systems). 724 Pages, Price 23 Rubles 25 Kopecks. B007/B008
Gosudarstvennoye izdatel'stvo fiziko-matematicheskikh literatury (State Publishing House of Physics and Mathematical Literature), 1959

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showed that the intermittent control is applicable to a wider class of technical systems, than the systems of automatic control. The author classified the various types of quantization of amounts and the types of impulse elements corresponding to them. The book consists of 6 chapters. A classification of the systems from the point of view of the methods for the transmission of signals in these systems is made in the introduction. The basic definitions are given in the 1st chapter and many characteristic examples of impulse systems are investigated. The mathematics for the investigation of impulse systems is given in the 2nd chapter. The theory of open impulse systems is explained in the 3rd chapter. The methods explained in the 3rd chapter are used in the 4th chapter for the investigation of a number of important impulse systems. The entire complex of problems from the theory of closed impulse systems is given in the 5th chapter. Typical impulse systems are analyzed in the 6th chapter. The book is written intelligibly, but it requires a certain theoretical preparation and knowledge. The present review was discussed and approved at the meetings of the kafedra "Avtomatika i telemekhanika" MEI (Chair of "Automation and Telemechanics" at the Moscow Institute

Card 2/3

80158

Ya. Z. Tsypkin. Teoriya impul'snykh sistem (Theory of Impulse Systems). 724 Pages, Price 23 Rubles 25 Kopecks. B007/B008
Gosudarstvennoye izdatel'stvo fiziko-matematicheskoy literatury (State Publishing House of Physics and Mathematical Literature), 1959

of Power Engineering) and the kafedra "Avtomatuskiy kontrol' i regulirovaniye" VZEI (Chair of "Automatic Control and Regulation" at the All-Union Correspondence Institute of Power Engineering).

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Card 3/3

S/089/60/010/001/015/020
B006/B063

26.2190
21.7100 (1482,1138,1496)
AUTHORS: Shumilovskiy, N. N., Gushchin, Yu. V.

TITLE: Instrument for Measurement and Automatic Control of the
Flow Rate of a Liquid by Radioactive Radiation

PERIODICAL: Atomnaya energiya, 1960, Vol. 10, No. 1, pp. 93-94

TEXT: A method worked out at the Institut avtomatika i telemekhanika
AN SSSR (Institute of Automation and Telemechanics AS USSR) for the
measurement of the rate of flow of liquids is based on the use of radio-
isotopes and on the effects of flow of liquids on the mechanical modulation of radioactive
radiation. A multiblade wheel in the liquid current serves as a sensitive
element. A radioisotope is pressed onto one or several blades in such a
manner as to exclude direct contact with the liquid. The external side of
the tube wall features a lead collimator which absorbs part of the rays
emitted by the isotope (Co^{60}); this absorption takes place along a
partial section of the way traveled by the source on the blade during its
rotation in the liquid current. A receiver behind a screen is connected to

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Instrument for Measurement and Automatic
Control of the Flow Rate of a Liquid by
Radioactive Radiation

S/089/60/010/001/015/020
B006/B063

the measuring instrument by a cable. Cs^{137} , Eu^{154} , Sn^{113} , and similar isotopes may be used instead of Co^{60} . The beam of radioactive radiation modulated by the wheel rotation hits the receiver (counter) which conveys the absorbed energy to the measuring instrument (e.g., an electronic recorder) in the form of electric wave packets. A flow-meter operating in this manner was tested at the Vsesoyuznyy nauchno-issledovatel'skiy institut stekla (All-Union Scientific Research Institute of Glass) by the flow measurement on fuel oil (masut). The error in the total flow determination is about $\pm 5\%$, and the maximum error of instantaneous measurements is about $\pm 1.5\%$. The Institute of Automation and Telemechanics AS USSR in cooperation with the Institut fiziki AN Latviyskoy SSR (Institute of Physics of the AS Latviyskaya SSR), the VNII for Glass, and the SKB Works "Avtoelektropribor" based on this experimental instrument to develop a standard design of the type P*P-1 (RZhR-1). A variant worked out for operation with beta rays permits measuring, e.g., a masut flow at pressures of 6 kg/cm^2 and more, for throughputs from some liters to 4,000 l/h. Such instruments are also suited for contactless speedometry, i.e., measurements of speed of rotating parts at difficultly accessible

Card 2/3

AMELIN, Anatoliy Gavrilovich; PLISKIN, Lev Gavrilovich; SHUMILOVSKIY,
Nikolay Nikolayevich; LEONOV, A.L., red.; SHPAK, Ye.G., tekhn.
red.

[Principles of the automation of sulfuric acid manufacture by
the contact process] Osnovy avtomatizatsii proizvodstva sernoj
kisloty kontaktnym metodom. Moskva, Gos. nauchno-tekhn. izd-
vo khim. lit-ry, 1961. 313 p. (MIRA 15:2)
(Sulfuric acid) (Automatic control)

SHUMILOVSKIY, N. N., YANUSHKOVSKIY, B. A., GUSHCHIN, Yu. V., KIRYUKHIN, V. D.,
and PUDONIKOV, V. N.

"A Unified Device for Automatic Control With the Use of Modulated
Radioactive Radiation"

paper presented at the All-Union Seminar on the Application of
Radioactive Isotopes in Measurements and Instrument Building,
Frunze (Kirgiz SSR), June 1961)

So: Atomnaya Energiya, Vol 11, No 5, Nov 61, pp 468-470

SHOMILOVSKIY, N. N., MEL'ITBER, L. V., and NAUMOV, A. A.

"Joint Utilization of Different Processes of Interaction of
Radiation With Matter for Automatic Control of Multicomponent
Mixtures Compounds"

paper presented at the All-Union Seminar on the Application of
Radioactive Isotopes in Measurements and Instrument Building, Frunze
(Kirgiz SSR), June 1961)

So: Atomnaya Energiya, Vol 11, No 5, Nov 61, pp 468-470

25751
S/024/61/000/001/005/014
E061/E128

26.2/95
AUTHORS: Chekhonadskiy, N.A., and Shumilovskiy, N.N. (Moscow)
TITLE: Concerning Some Problems of the Application of the Theory of Invariance

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1961, No.1, pp. 124-132

TEXT: The paper considers some problems of the application of the theory of invariance and the compensation of disturbances to complex measuring systems in order to improve their accuracy. Measuring systems are considered as a series of elements connected in cascade or in some cases with feedback loops. Errors arise due to element imperfections, the effect of outside variables and dynamic response. A system consisting of a number of linear elements in cascade is considered. The input, the outside disturbances and the effects of imperfections in the elements, are assumed to be random. Expressions for the central tendency and the dispersion of the resulting errors are derived. An analysis of the expressions shows that for such a system absolute invariance is only possible if the instrument is an ideal filter with respect to Card 1/3 X

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Concerning Some Problems of the Application of the Theory of Invariance

all outside disturbances. Approximate invariance is obtained if the sum of the mean error components due to the outside disturbances is zero, though there is still error due to the random spread of outside disturbances. Approximate invariance also results if the algebraic sum of the mean errors due to outside disturbances is opposite in sign to the dynamic error and the imperfections in the instruments. Next the response of a system with a negative feedback loop, subject to slow random changes of the measured variable and of disturbances, is considered. It is shown that the existence of negative correlations among the various error-producing disturbances may lead to some reduction of the dispersion of error. It is also shown that if the transfer function of the elements in the feedback loop is a certain function of the error producing disturbances the value of error can be reduced to zero. However, this is not practicable since in the general case of non-stationary random disturbances this would involve a feedback transfer function which varies as a function of

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Concerning Some Problems of the Application of the Theory of Invariance

the disturbance. When the random disturbances are stationary, however, a suitable transfer function can be found and full suppression of the mean value of error by this means is possible. There are 3 figures and 8 Soviet references.

SUBMITTED: March 9, 1960

X

Card 3/3

S/830/61/000/079/006/011
E140/E463

AUTHORS: Shumilovskiy, N.N., Rybashov, M.V.
TITLE: The use of analogue computer elements in automatic measurement systems
SOURCE: Lvov. Politekhnichnyy instytut. Nauchnyye zapiski. no.79. Voprosy elektroizmeritel'noy tekhniki. no.1. 1961. 143-159

TEXT: The article considers the functional dependence of an indirectly measured parameter on a number of directly measurable parameters

$$y = f(x_1, x_2, \dots, x_n) \quad (1)$$

An example is given of the consumption of steam in a steam conduit, measured by the pressure drop on a diaphragm, but this measurement is affected by secondary factors such as the temperature, pressure, vapour content etc. A number of schemes are presented, from simple second-order corrections linearly combined with the value obtained from the primary measurement, up to complete analogue computation of the function represented by (1). Examples are drawn from the measurement of Card 1/2

S/880/61/000/079/006/011
E140/E463

The use of analogue computer ...

a) consumption of dry gas, b) steam consumption, c) the temperature of a gas stream in the range 400 to 1700°C,
d) the same, at very high flow velocities, of the order of 100 m/s.
The article concludes with a consideration of attainable precision, estimated to be of the order of 1%. There are 9 figures.

Card 2/2

S/880/61/000/079/008/011
E194/E455

AUTHORS:

Shumilovskiy, N.N., Mel'ttser, L.V.

TITLE:

The use of modulated radioactive radiation to measure
gas-flow rate and velocity

SOURCE:

Lvov. Politekhnichnyy institut. Nauchnyye zapiski.
no.79. Voprosy elektroizmeritel'noy tekhniki. no.1.
1961. 188-198

TEXT: Pulses of ionizing radiation (preferably β -radiation) are periodically applied to the tube in which gas is flowing so that intermittent bundles of ionization appear in the gas flow. An ionization detector consisting of two electrodes which may be insulated but not screened from the gas flow and to which an electric field is applied, is located downstream from the ionizing source. The passage of bundles of ionized gas is suitably recorded and timed. The radiation may be modulated into pulses by a rotating shutter by a magnetic deflection of the ionizing particles (which has the advantage of avoiding moving parts) or if need be by moving the source. Simple calculations are made of the ionization produced by a bundle of β -radiation and

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S/880/61/000/079/008/011
E194/E455

The use of modulated radioactive ...

of the ionization loss whilst the bundle is in transit to the detector. The gas flow is viscous, and so the velocity is not uniform across the section; an approximate calculation can be made of the pulse shape at the detector. However, it was found convenient to study the trajectory of charged particles in an electrolytic tank. A laboratory rig of the apparatus was then set up, using a small wind tunnel with conventional flow-measuring equipment. The impulse wave-shape was recorded oscillographically and found to be in reasonable agreement with theory. Many tests showed that the mean rate of flow coincides accurately with the mean time of transit of the maximum number of ions of the tagged volume. Accordingly, it suffices to measure the time between initiation of the impulse and the occurrence of the peak at the detector. The source used was Tl^{204} with an activity of 35 mCi. The shutter was driven at 600 rpm, giving a pulse duration of 2×10^{-3} seconds with a distance of 50 cm between ionizer and the detector. Recombination, diffusion and adsorption of ions had little effect with flow rates in the range 5 to 30 m/sec. A special measuring circuit was developed for continuous

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E194/E455

The use of modulated radioactive ...

automatic measurement of mean transit time of ionized bundles and the output was calibrated in units of flow. Limitations of the method are mainly associated with the short life of the ionized bundles and with selection of recurrence frequency. A bundle must have completed its transit before the next starts. Moreover, the transit time must be much longer than the pulse duration. The limitations are particularly noticeable in measuring a flow which travels relatively slowly but varies relatively rapidly. However, the method has considerable possibilities for metrological and aerodynamic investigations of pulsating flows and at supersonic flow rates. The use of modulated radioactive radiation appears promising for numerous other kinds of instrument. There are 9 figures.

Card 3/3

SHUMILOVSKIY, N.N.; MEL'ITTSER, L.V.; KALMAKOV, A.A.; TENYAYEV, V.G.

Use of radioactive isotopes in fluorescent analysis for the
automatic control of ore-dressing products. Izv. vys. ucheb.
zav.; tsvet. met. 4 no.3:140-147 '61. (MIRA 15:1)

1. Institut avtomatiki i telemekhaniki AN SSSR i Krasnoyarskiy
institut tsvetnykh metallov. Rekomendovana kafedroy obogashcheniya
poleznykh iskopayemykh Krasnoyarskogo instituta tsvetnykh metallov.
(Ore dressing)
(Radioisotopes--Industrial applications)
(Fluorimetry)

SHUMILOVSKIY, N.N., akademik, otv. red.; MIKHAYLOVSKIY, V.N., zam. otv. red.; CLAUBERMAN, A.Ye., doktor fiz.-mat. nauk, red.; SVENSON, A.II., kand. tekhn. nauk, red.; BEREZINSKIY, V.P., inzh., red.; SABANEYEV, R.D., nauchnyy red.; LIEKMAN, T.R., tekhn. red.

[Instruments for geophysical studies of wells by radioactive methods; transactions] Pribory dlia geofizicheskikh issledovanii skvazhin radioaktivnymi metodami; trudy. Kiev, Izd-vo Akad. nauk USSR, 1962. 190 p. (MIRA 15:9)

1. Vsesoyuznyy seminar po primeneniyu radioaktivnykh izotopov v izmeritel'noy tekhnike, L'vov, 1960. 2. Akademiya nauk Kirgizskoy SSR (for Shumilovskiy). 3. Chlen-korrespondent Akademii nauk Ukrainskoy SSR (for Mikhaylovskiy)
(Radioactive prospecting-- Equipment and supplies)

SHUMILOVSKIY, N.N., otv. red.; PIVOVAROV, L.A., otv. red.; FOMENKO,
V.L., red.izd-va; SKRIPKINA, Z.I., red.izd-va; ANOKHINA,
M.G., tekhn. red.

[Radioisotope techniques in automatic control] Radioizotop-
nye metody avtomaticheskogo kontrolya; trudy rasshirennogo
soveshchaniia.... Frunze. Izd-vo Akad. nauk Kirgizskoi SSR.
Vol.2. 1962. 235 p. (MIRA 16:4)

1. Vsesoyuznyy seminar po primeneniyu radioaktivnykh izotopov
v izmeritel'noy tekhnike i priborostroyeniy. Frunze, 1961.
(Radioisotopes--Industrial applications)
(Electronic instruments) (Automatic control)

SHUMILOVSKIY, N.N.

Problems confronting science in the field of radioisotope measurement
technology. Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no. 2:9-17
Mr=Ap '62. (MIRA 15:4)
(Radioisotopes--Industrial applications)

SHUMILOVSKIY, N.N., otv. red.; POGORELOVA, V.K., red.izd-va;
POPOVA, M.G., tekhn. red.

[Use of contactless elements in automatic control systems]
Primenenie beskontaktnykh elementov v sistemakh avtomati-
cheskogo kontrolia. Frunze, Izd-vo AN Kirg.SSR, 1963. 35 p.
(MIRA 17:1)

1. Akademiya nauk Kirgizskoy SSR, Frunze. Institut avtomatiki.

GRINEVICH, Feodosiy Borisovich; CHEBOTAREV, Anatoliy Vladimirovich;
NOVIK, Anatoliy Ivanovich; SHUMILOVSKIY, N.N., otv. red.;
SKRIPKINA, Z.I., red. izd-va; POPOVA, M.G., tekhn. red.

[Elements and networks of experimental a.c. digital bridges]
Elementy i skhemy tsifrovых ekstremal'nykh mostov peremen-
nogo toka. Frunze, Izd-vo AN Kirg.SSR, 1963. 141 p.
(MIRA 17:1)

SHENKLOVSKY, N.N., etc., red.; SIVOVAROV, L.A., etc., red.

[Radioisotope methods of automatic control; transactions of the enlarged meeting] Radiotekhnicheskie metody avtomaticheskogo kontrolya trudy rasширенного съезда на Ученом комитете АН Киргизской ССР. Vol. 1. 1963. 273 p. (MIRA 18:8)

2. Vsego uchazhnyy seminar po primeneniyu radioaktivnykh izotopov v fizicheskoy tekhnike i pribordostroyenii. 1961.

L 43100-65 EWP(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) P0-4/P0-4/Pf-4/Pg-4/Pk-4/P1-4
IJP(c) GS/DC S/0000/63/000/000/0018/0031

ACCESSION NR: AT5006206

AUTHOR: Shumilovskiy, N. N.; Kurotchenko, V. I.; Krasnoborodkina, T. A.

TITLE: Use of decimal scaling circuits for construction of modular unified automatic control systems

SOURCE: AN KirgSSR. Institut avtomatiki. Primeneniye beskontaktnykh elementov v sistemakh avtomaticheskogo kontrolya (Use of contactless elements in automatic control systems). Frunze, Izd-vo AN KirgSSR, 1963, 18-31.

TOPIC TAGS: telemechanics, telemetering, digital decoder, radioactivity, automation

ABSTRACT: Modulated radioactive data units are widely used in discrete automatic control systems, but the great variety of methods and means of automatic control hinders planning of new automated enterprises and shops and their supply with new technical equipment. A single series of unified modular installations should be developed which operate in conjunction with radioactivity pickups. Work in this field has been going on in the Institute of Automation and Telemechanics AN SSSR, the SKB of the "Avtoelektropribor" plant and elsewhere. In 1961 the Telemechanics Laboratory of the Institute of Automation AN Kirgiz SSR began work on unified programmed batchers with digital readout, based on contactless elements (e.g. magnetic

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ACCESSION NR: AT5006206

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elements with rectangular hysteresis loops, semiconductor diodes, transistors etc.). There is a choice of three principles for such installations: serial binary, serial decimal, and parallel. The serial decimal principle is the most promising because it obviates extra digital decoding equipment. Such a system, developed in the Telemechanics Laboratory, is described in detail, with extensive schematics. An experimental model has successfully passed laboratory tests. Orig. art. has 8 figures.

ASSOCIATION: none

SUBMITTED: 28Aug63

ENCL: 00

SUB CODE: DP, EC

NO REF SOV: 006

OTHER: 000

Card 2/2

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001550210020-5

SHUMILOVSKIY, N.N. (Moskva); MEL'TTSER, L.V. (Moskva); BRAUN, I.A. (Moskva)

Prospects of using the Mössbauer effect in automatic control.
Izv. AN SSSR. Tekh. kib. no.6:111-120 N-D '63. (MIRA 17:4)

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001550210020-5"

AKHIEZER, . . . , et al. Red.

[Elements of networks of digital differential analyzers]
Elementy i usly tsifrovikh differentsial'nykh analizatorov. Frunze, 1964. 52 p. (MFA 17:12)

L. Andriyev - uk Kirgizskoy SSR, Frunze. Institut avtomatiki.

SHUMILOVSKIY, Nikolay Nikolayevich; MEL'TSER, Lel' Vladimirovich;
KALMAKOV, Andrey Alekseyevich; TENYAYEV, V.G., red.

[Radioisotope methods for the automatic control of the
composition of complex media] Radioizotopnye metody avto-
maticseskogo kontrolia sostava slozhnykh sred. Moskva,
Energiia, 1964. 63 p. (Biblioteka po avtomatike, no.113)
(MIRA 17:12)

SHUMILOVSKIY, N.N., otd. red.

[Physical methods of automatic control] Fizicheskie metody
avtomaticheskogo kontrolya. Frunze, Izd-vo "ILIM," 1964.
(MIRA 18:1)
110 p.

1. Akademiya nauk Kirgizskoy SSR, Frunze, Institut avtoma-
tiki.

SHOMILOV, K., et al. - Red.

[On acileus automatic and remote control systems] № 3
kontaknye sistemy telemekhaniki i avtomaticheskoy
kontrolia. Frunza, Iss-vo "Ilin." 1964. 71 p.
[USSR R.S.F.S.R.]
I. Akademiya nauk Kirgizskoy SSR, Frunza. Institut avto-
matiki.

SHUMILOVSKIY, Nikolay Mikhayevich; YAKOVLEVICHUK, Georgiy
Griger'yevich; GRACHEVETSKIY, Vsevolod Prokof'yevich;
PRUSOV, Mikhail Antipevich

[Bidy current methods for production parameter control]
principles of theory and design] Metod vikhrevykh tsikov
dlya kontrolya prizvodstvennykh parametrov: teoriya
i rascheta. [By] N.N. Shumilovskii i dr. Frunze, Izd-vo
"Ilim," 1981. 296 p. (MIRA 18;3)

L 1872-66 EWT(m) DIAAP
ACCESSION NR: AR5013614

UR/0271/65/000/004/A081/A081
62-52:539.163

39

B

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika.
Svodnyy tom, Abs. 4A517

AUTHOR: Shumilovskiy, N. N.; Krasnoborodkina, T. A.

TITLE: Principal problems in constructing standardized unitized discrete-action systems intended for automatic monitoring and control and using radio-isotope sensors 14

CITED SOURCE: Sb. Beskontakt. sistemy telemekhan. i avtomat. kontrolya,
Frunze, Ilim, 1964, 15-28

TOPIC TAGS: automatic control system, industrial automatic control

TRANSLATION: The problems are considered of constructing standardized unitized discrete-action equipment for the automatic monitoring and control which arise in controlling various industrial processes that use radio-isotope sensors. Such sensors convert the measurand in a proportional number of pulses which permits easy introduction and processing of information derived from the sensors by means of computers or functional computing units. There is a great variety in

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ACCESSION NR: AR5013614

the serial industrial counting and programing devices which makes the application of such devices difficult. Hence, it is expedient to develop typical units and standardized systems for automatic control. A tentative list of standardized units is suggested, and block diagrams for the control of various processes using such units are presented. By analyzing these diagrams, a block diagram of a standardized measuring system for automatic-control purposes is developed, and fundamental specifications for such systems are formulated. In 1961, at the Institute of Automatics AN KirgizSSR, the development of various parts of such a system was begun. An automatic-program batching device was developed which was intended for an automatic measuring and program batching of multicomponent mixtures in the mining, food, chemical, and other industries. The system permits automatic counting of piece product, packing according to a given program, monitoring the flow of liquids and gases, measuring motor rpm or tape length. The program can be changed by switches. The maximum capacity of an experimental model was 999 units. The maximum count frequency was 2000 pulse/sec. A block diagram of the system is given. Bibl. 15, figs. 4.

ENCL: 00

SUB CODE: IE, NP

69
Card 2/2

SHUMILOVSKIY, N.N.; SALAKHUTDINOV, N.; KALMAKOV, A.A.

Method for controlling the tin content in minerals from the
resonance absorption of gamma rays (Mossbauer effect). Izv.
AN Uz. SSR. Ser. tekhn. nauk 8 no.5:29-37 '64. (MIRA 18:2)

1. Institut avtomatiki AN KirgSSR.

FEDORENKO, N.P., akademik; SUKACHEV, V.N., akademik; KARAKEYEV, K.K.; FRANK, G.M.; KONSTANTINOV, B.P., akademik; ASTAUROV, B.L.; YEFIMOV, A.N.; SHUMILOVSKIY, N.N.; ISHLINSKIY, A.Yu., akademik; GERASIMOV, I.P., akademik; KAZARNOVSKIY, I.A.; BYKHOVSKIY, B.Ye., akademik; ZHEBRAK, A.R., akademik

Discussion of the annual report. Vest.AN SSSR 35 no.3:95-112
(MIRA 18:4)
Mr '65.

1. Prezident AN Kirgizskoy SSR (for Karakeyev). 2. Chleny-korrespondenty AN SSSR (for Frank, Astaurov, Yefimov, Kazarnovskiy).
3. AN Kirgizskoy SSR (for Shumilovskiy). 4. AN BSSR (for Zhebrak).

MILLIONSHCHIKOV, M.D., akademik; ARUTYUNOV, K.B.; NESMEYANOV, A.N., akademik; TAL'ROZE, V.L., doktor khim.nauk; PAVLENKO, V.A.; KOTEL'NIKOV, V.A., akademik; PETROV, B.N., akademik; NOVIKOV, I.I.; MANDEL'SHTAM, S.L., doktor fiz.-matem.nauk; VAYNSHTEYN, B.K.; SHUMILOVSKIY, N.N., akademik

Problems in the manufacture of scientific instruments. Vest.AN SSSR
35 no.6:3-20 Je '65. (MIRA 18:8)

1. Glavnnyy konstruktor Spetsial'nogo konstruktorskogo byuro analiticheskogo priborostroyeniya (for Pavlenko). 2. Chleny-korrespondenty SSSR (for Novikov, Vaynshteyn). 3. AN Kirgizskoy SSR (for Shumilovskiy).

NEBOLYUBOV, Yurii Yevgen'yevich; SHUMILOVSKIY, N.N., otv. red.

[Commutation in a.c. commutator engines] Kommutatsiya
kollektornykh mashin peremennogo toka. Frunze, Ilim,
1965. 171 p. (MIRA 18:11)

REMARKS: (a) A new computer system has been developed which

utilizes traditional type devices, such as, consideration in
constraint terms, and statistical terms, of the input
signals. (Normal file 10/28/71 - 10/28/72) (WNA 38:9)

edit., Brat'ev V. V. i dr.; novosti; MIR, G. I., red.; SHUMILOVSKIY, N. N., red.

[Polarographic methods] Poliarograficheskie metody. Izd
obshchei red. N. N. Shumilovskogo. Moskva, Energiia, 1965.
ill p. (MIR: 1961)

L 25572-66 EWT(m)/EWP(t)/EWA(h) DIAAP JD

ACC NR: AM6013004

Monograph

UR/

35
B+1

Shumilovskiy, Nikolay Nikolayevich; Betin, Yurii Pavlovich;
Verkhovskiy, Boris Isaakovich; Kalmakov, Andrey Alekseyevich;
Mel'ttser, Lel' Vladimirovich; Ovcharenko, YEvgeniy YAkovlevich

19
Radioisotope and X-ray spectral methods (Radioizotopnyye i rentgenospektral'nyye metody) Moscow, Izd-vo "Energiya", 1965.
190 p. illus., biblio. 4500 copies printed. Series note: Fizicheskiye i fizikokhimicheskiye metody kontrolya sostava i svoystv veshchestva

TOPIC TAGS: x-ray analysis, x-ray spectroscopy, x-ray technique, messbauer effect, radiation detection, neutron source

PURPOSE AND COVERAGE: The book is intended for people interested in radioisotopes and x-ray spectroscopy. It may also be useful for students specializing in spectroscopy and radioisotopes at technical schools of higher education. The first part of the book deals with the principles of operation, calculation methods, and design of radioisotope instruments, based on use of absorption and scattering effects of beta and gamma radiation, excitation of secondary radiation, and the use of neutron sources. The second part is devoted to methods of x-ray spectroscopy. Physical fundamentals of these methods are reviewed, ways for reducing measurement errors given,

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UDC 543.422.8:543.52

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L 25572-66

ACC NR: AM6013004

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and examples of the industrial use of x-ray spectral analyzers
discussed.

TABLE OF CONTENTS:

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Part I. Radioisotope Techniques

Ch.1. Interaction of nuclear radiation with matter -- 7

Ch.2. Detection of registering nuclear radiation -- 25

Ch.3. Methods based on use of the absorption and scattering of
radiation -- 37

Ch.4. Methods based on excitation of secondary radiation -- 76

Ch.5. Methods based on the use of neutron fluxes -- 94

Ch.6. The use of Messbauer effect -- 123

Part II. X-Ray Spectral Instruments and Methods of Analysis

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- Ch.7. The principles of x-ray spectral methods of analysis -- 129
- Ch.8. Sources of errors and means for increasing the accuracy during x-ray spectral analysis -- 143
- Ch.9. X-ray spectral devices and their application -- 160
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SUB CODE: 18/ SUBM DATE: 250ct65/ ORIG REF: 109/ OTH REF: 081

Card 3/3 FW

L 26676-66 EWT(m) DIAAP

ACC NR: AP6017129

SOURCE CODE: UR/0410/65/000/002/0084/0091

AUTHOR: Klempner, K. S. (Donetsk); Cherednichenko, I. M. (Frunze);
Shumilovskiy, N. N. (Frunze)

ORG: none

TITLE: Design of radioactive isotope instruments in consideration of apparatus errors and statistical characteristics of the input signal

SOURCE: Avtometriya, no. 2, 1965, 84-91

TOPIC TAGS: electric measurement, radioisotope, signal to noise ratio

ABSTRACT: Problems of accuracy in measurements with the aid of radioactive isotope instruments are discussed, in consideration of the statistical characteristics of the input signal and apparatus errors of all types. An accounting is made of apparatus errors, dependent and independent of the intensity of the current being measured. A general expression is developed which connects the error in measurement Δx , sensitivity of method of measurement q and signal to noise ratio z . Conditions of measurement are found at which the maximal signal to noise ratio is to be obtained. It is shown that identical measurement accuracy may be attained by instruments with different apparatus errors by changing the sensitivity of the method of measurement. Orig. art. has: 2 tables, 2 figures, and 25 formulas. [JPRS] 9M

SUB CODE: 14, 09, 18 / SUBM DATE: 02Nov64 / ORIG REF: 006 / OTH REF: 001

Card 1/1 BIG

UDC: 681.2.088.001.12 : 621.384.2

L 23170-66 EWT(m)/EWA(h) GS
ACC NR: AT5028946 (N)

SOURCE CODE: UR/0000/63/000/000/0209/0217

AUTHOR: Shumilovskiy, N. N.; Kurotchenko, V. I.; Krasnoborodkina, T. A.

ORG: none

TITLE: A programmed dosimeter for modulated radioactivity

SOURCE: Vsesoyuznyy seminar po primeneniyu radioaktivnykh izotopov v izmeritel'noy tekhnike i priborostroyenii. Frunze, 1961. Radioizotopnyye metody avtomaticheskogo kontrolya (Radioisotope methods of automatic control); trudy rasshirennogo soveshchaniya, v. 1. Frunze, Izd-vo AN KirgSSR, 1963, 209-217

TOPIC TAGS: radiation dosimeter, radioactivity measurement, pulse counting

ABSTRACT: An industrial test model of a programmed dosimeter constructed in the laboratories of the Institute of Automation of the AN KirgizSSR is described. The dosimeter measures radiation levels by pulse counting techniques and signals the moderators to modulate or control radioactivity levels. Block diagrams of a system proposed by the IAT AN SSSR were used with some modifications. A complete explanation of the principles of operation and a block diagram of the dosimeter are

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Card 2/2 APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550210020-5

Shumilyas

POLAND / Chemical Technology. Processing of Naturally H
Deposited Solid Fuels.

Abs Jour: Ref Zhur-Khimya, No 22, 1958, 75187.

Author : Shumilyas, Bzhezinsky.

Inst : Not given.

Title : The Operation Cycles in Repairing Machines Used
With Coke Ovens.

Orig Pub: Koks, smola, gaz., 1957, 12, No 6, 259-264.

Abstract: The advantages in introducing serial and cyclic
operations in coke chambers, and cycles in re-
pairing the machines and devices servicing the
ovens were demonstrated on the Lenin's Coke
plant used as an example.

Card 1/1

38

SHUMINA, L.A.
MARKOV, B.F.; SHUMINA, L.A.

Electric conductivity of binary salt melts, as dependent on
concentration. Dokl. AN SSSR 110 no.3:411-413 S '56. (MLRA 9:12)

1. Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR.
Predstavлено академиком А.Н. Фрумкиным.
(Systems (Chemistry)) (Salts--Electric properties)

MARKOV, B.F.; SHUMINA, L.A.

The dependence of electric conductivity on the concentration
of binary salt fusions [with summary in English]. Zhur.fiz.khim.
31 no.8:1767-1773 Ag '57. (MIRA 10:12)

1. AN USSR, Institut obshchey i neorganicheskoy khimii, Kiyev.
(Salts--Electric properties)

NUZHNYY, V.M. [Nuzhnyi, V.M.]; SHIMANSKIY, Yu.I. [Shymans'kyi, Yu.I.];
SHUMINA, R.A. [Shumina, R.O.]

Condensation growth of droplets of aqueous solutions of
NaCl in a stationary adjacent vapor - gas phase. Ukr. fiz.
zhur. 10 no. 11:1237-1243 N '65. (MIRA 18:12)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.
Submitted Dec. 22, 1964.

GUSEVA, A.A., dotsent, kand.tekhn.nauk; SHUMINA, S.I., inzh.; GROMAK,
N.P., inzh.

Graphical analysis of the operation of the reverse two-system
jacquard automatic hosiery knitting machine. Izv.vys.ucheb.
zav.; tekhn.leg.prom. no.3:92-106 '59. (MIRA 12:12)

1. Moskovskiy tekstil'nyy institut (for Guseva) Rekomendovana
kafedroy tekhnologii trikotazha. 2. Chulochnaya fabrika im.
Nogina (for Shumina).
(Knitting machines)

MALEVANNYY, V.A.; Prinimala uchastive SHUMINA, V.A.

Rapid method for determining manganese in pigment-rich titanium dioxide. Lakokras. mat. i ikh prim. no.6:59-60 '61.

(MIRA 15:3)

1. Chelyabinskiy filial Gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo instituta lakokrasochnoy promyshlennosti.
(Titanium oxide) (Pigments) (Manganese)

MALEVANNYY, V.A.; Prinimala uchastiye: SHUMINA, V.A.

Simplified method of determining zinc oxide and lead oxide
content of zinc white pigments. Lakokras.mat.i ikh prim. no.3:
73-75 '62. (MIRA 15:7)

1. Chelyabinskiy filial Gosudarstvennogo nauchno-issledovatel'skogo
i proyektnogo instituta lakokrasochnoy promyshlennosti.
(Pigments—Analysis)
(Zinc oxide) (Lead oxide)

MALIVANNYY, V.A.; ZHOLNIN, A.V.; Prinimali uchastiye: BANOKINA, K.I.;
RAYAZITOVA, A.I.; SHUMINA, V.A.

Determination of dioxide ferric oxide and zinc oxide content in
.litium. Khim. volok. no.6:67-68 '64.

(MIRA 18:1)

1. Chelyabinskiy filial GIMP.

DURASOVA, M.S.; LAVRINOV, G.A.; SHUMINKINA, V.M.; YUDIN, O.I.

Use of the "quasi-zero" method in observing weak perturbations
of minimum solar activity, of the radio-frequency radiation of
the sun in years. Geomag. i aer. 4 no.5:938-940 S-0 '64. (MIRA 17:11)

1. Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom uni-
versitete.

SHUMITSKAYA, L.F.

112-1-1537

Translation from: Referativnyy Zhurnal, Elektrotehnika, 1957,
Nr 1, p. 233 (USSR)

AUTHOR: Shumitskaya, L.F.

TITLE: Change of Electric Properties of Glasses of Simple
Composition With the Replacement of PbO by BaO
(Izmeneniye elektricheskikh svoystv stekol prostogo
sostava pri zamene PbO na BaO)

PERIODICAL: Inform.-tekhn. sb. Tsentr. n.-i. labor. elektrotekhn.
stekla, 1955, Nr 3, pp,21-38

ABSTRACT: The possibility of obtaining electric-vacuum glasses
with good dielectric properties with a partial replace-
ment of PbO by BaO was investigated. The establishment
of an optimal relation between PbO and BaO was made
with glasses of simple composition corresponding to
the formula $1R_2O \cdot 1R_0 \cdot 6SiO_2$. In the quality of

Card 1/3

Change of Electric Properties of Glasses of Simple Composition (Cont.)

112-1-1537

by the method of stretching a glass thread under constant load. It was established that glasses with a molecular ratio PbO/BaO = 0.25/0.75 possess the best dielectric properties and at the same time, the softening temperature of these glasses increases little (approximately by 20°) as compared with pure-lead glasses. In designing silicate electric vacuum glasses it is recommended that a substitution of PbO by BaO in a molecular ratio of 3:1 be made.

Card 3/3

D.L.K.

L-24322-66 RHM(R)/EMI(U)/T ID/1G/4
ACC NR: AP6007677

SOURCE CODE: UR/413/66/000/003/0049/0049

INVENTOR: Shumitskaya, L. F.; Gol'dfarb, M. L.; Tuzova, V. K.

ORG: none

TITLE: Glass resistant to vapors of alkaline metals

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3,
1966, 49

TOPIC TAGS: glass, glass product, alkali resistant glass

ABSTRACT: An Author Certificate has been issued for glass resistant to alkali metal vapors containing SiO_2 , B_2O_3 , Al_2O_3 , CaO , and SrO . In order to produce glass products without matte, it is suggested that the above ingredients be introduced in the following amounts (wt %): SiO_2 , 12 ± 2 ; B_2O_3 , 32 ± 2 ; Al_2O_3 , 32.5 ± 2 ; CaO , 20 ± 1.5 ; SrO , 35 ± 1.5 ; and in addition, not over 0.3 of Fe_2O_3 . [LD]

SUB CODE: 11/

SUBM DATE: 28Jul64/

Card 1/1 JLR

666.112.92
UDC: 666.117.4

Z

L 5306-66 EWP(e)/EWT(m)/EWP(i)/EWP(b) WH
ACC NR: AP5025716

SOURCE CODE: UR/0286/65/000/018/0070/0070

AUTHORS: Shumitskaya, L. F.; Monakhova, Ye. M.

ORG: none

TITLE: Glass. Class 32, No. 174778 [announced by State Scientific Research Institute of Electrovacuum Glass (Gosudarstvennyy nauchno-issledovatel'skiy institut elektrovakuumnogo stekla)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 70

TOPIC TAGS: glass, silicon dioxide, boron oxide, barium oxide, strontium oxide, aluminum oxide, iron oxide

ABSTRACT: This Author Certificate presents a glass containing SiO_2 , B_2O_3 , BaO , and SrO . To increase its resistance¹⁵ to the vapors of basic metals, the weight percent content of the indicated components is as follows: SiO_2 -- 3-6; B_2O_3 -- 20-23; BaO -- 41-42.5; SrO -- 4-5.2. This glass also contains 27-29% of Al_2O_3 and not over 0.03% of Fe_2O_3 .

Card 1/2

09010612

L 5306-66

ACC NR: AP5025716

SUB CODE: MT, IC/ SUBM DATE: 12Mar64/ ORIG REF: 000/ OTH REF: 000

PC
Card 2/2

L08301427 EMP(e)/EMI(m)/EMP(t)/ETI LJP(c) ID/AN/IC/NB
ACC NR: AP6031745 SOURCE CODE: UR/0072/66/000/007/0011/0014

AUTHOR: Shumitskaya, L. F.; Gegelashvili, V. K.; Zhukovskiy, V. V.; Svidzinskaya, I. V.

ORG: Ordzhonikidze Plant of Container Glassware and Glass Insulators (Ordzhonikidzev-
skiy steklotarno-izolyatornyy zavod)

TITLE: Production of glasses stable to the action of alkali metal vapors

SOURCE: Steklo i keramika, no. 7, 1966, 11-14

TOPIC TAGS: borate glass, aluminophosphate glass, sodium, cesium

ABSTRACT: As a result of studies of aluminoborate and aluminoborophosphate glass sys-
tems, carried out at NIIES, S50-1 glasses stable to the action of cesium vapor and
S50-2 glasses stable to the action of sodium vapor were developed. The founding and
processing technology worked out by NIIES has been used at the Ordzhonikidze Plant
since 1963. Physicochemical and other properties of S50-1 and S50-2 glasses are re-
viewed. The furnaces used for founding the glasses and the schedules employed are
described. The adoption of production of glasses resistant to alkali metal vapors has
permitted the Moscow Electric Lamp Plant (Moskovskiy elektrolampovyy zavod) to manu-
facture highly economical sodium vapor illumination lamps and sodium and cesium vapor
spectral lamps. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001

Card 1/1 afs

UDC: 666.117.4

SHUMITS'KA, N.M.

Effect of hibernation on the immunological condition of the body.
(MIRA 11:2)
Medich.zhur. 22 no.2:55-63 '52.

I. Z viddilu imunologii (zav. - chlen-kor. AN URSR prof. M.M. Sirotinin) Institutu eksperimental'noi biologii i patologii im. akad. O.O.Bogomol'tsya Ministerstva okhoroni zdorov'ya URSR (direktor - prof. O.O.Bogomolets')
(HIBERNATION) (IMMUNITY)

SECRET SOURCE

SKUTSHEVSKIY, V. I.: "Immunological reactivity and the course of infection in animals during hibernation and hibernacal sleep." Kiev Order of Labor No. 1000 Medical Institute Academician A. A. Bojarko. Kiev, 1951. (Dissertations for the Degree of Candidate in Medical Sciences).

SO: Pravilnaya letopis' No. 22, 1950

SHUMITSKAYA, N.M.

Effect of drug-induced sleep on immunological reactivity and the course of infection in an experiment. Fiziol.zhur. (Ukr.) 2 no.3: 108-114 My-Je '56. (MLRA 9:10)

1. Institut fiziologii imeni O.O.Bogomol'tsya Akademii nauk URSR.
laboratoriya porivnyal'noi i vikovoi fiziologii.
(SLEEP) (INFECTION)

SHUMITSKAYA, N.M. [SHUMYTS'KA, N.M.]

~~Unconditioned interoceptive reflexes from the animal intestine in ontogeny [with summary in English]. Fiziol.zhur. [Ukr.] 4 no.3 (MIRA 11:7)~~
305-312 My-Je '58

1. Institut fiziologii im. O.O. Bogomol'tsya AN URSR, laboratoriya proivnyal'noi i vikovoi fiziologii.
(INTESTINES-- INNERVATION)
(REFLEXES)

SHUMITSKAYA, N.M. [Shumyts'ka, N.M.]

Changes in the blood and allergic skin tests in persons with bronchial asthma under conditions of gradual acclimatization to a high-mountain climate. Fiziol. zhur. [Ukr.] 6 no.6:777-784 N-D '60. (MIRA 14:1)

1. Laboratory of Comparative and Age Physiology of the A.A.
Bogomoletz Institute of Physiology of the Academy of Sciences of
the Ukrainian S.S.R. (ASTHMA) (ALTITUDES, INFLUENCE OF)
(ALLERGY)

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CIA-RDP86-00513R001550210020-5

SPASOKUKOTSKIY, Yu.A., prof.; SHUMITSKAYA, N.M., kand.med. nauk

Second Ukrainian Conference of Pathophysiolologists. Pat. fiziol.
(MIRA 17:3)
i. 1986. Zap. 6 no.6:86 N-D:62

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001550210020-5"

TAHUSHKIN, P., inzh.; SHUMITSKIY, O., inzh.

Air-preheater shells made of rolled materials. Stroili arkhit.
(MIRA 13:6)
8 no.6:4-5 Je '60.
(Air preheaters)

SHUMITSKIY, O.

New design details for roofs of industrial buildings using thin-walled bent profiles. Prom. stroi. i inzh. soor. 4 no.3:1-6 My-Je '62.
(MIRA 15:7)

1. Glavnnyy inzhener Gosudarstvennogo proyektnogo instituta po proyektirovaniyu, issledovaniyu i ispytaniyu stal'nykh konstruktsiy i mostov.

(Trusses)

SHUMITSKIY, O.I.

PATON, Ye.O., akademik [deceased]; LEBED', D.P., inzhener; RADZEVICH, Ye.N., inzhener; SHUMITSKIY, O.I., inzhener; SHAPRAN, I.S., inzhener; PATON, B.Ye. otvetstvennyy redaktor; SAMOKHVALOV, Ya.A., redaktor; SIVACHENKO, Ye.K., tekhnredaktor

[Use of automatic welding in the construction of a large all-welded city bridge] Primenenie avtomaticheskoi svarki pri stroitel'stve bol'shogo gorodskogo tsel'nosvarnogo mosta. Kiev, Izd-vo Akademii nauk Ukrainskoi SSR, 1954. 1954. 56 p. [Microfilm] (MLRA 7:10)

1. Chlen-korrespondent AN USSR (for Paton, B.Ye.)
(Bridges, Iron and steel) (Welding)

SHUMITSKIY, O.I., inzhener.

Design for the antenna tower of the Moscow television center.
Nov.tekh.i pered.op.v stroi. 19 no.4:1-5 Ap '57. (MIRA 10:?)
(Moscow--Television--Antennas) (Steel, Structural)

SOV/125-59-9-6/16

18(5)

AUTHOR:

Novikov, V.I., Candidate of Technical Sciences, Kovtunenko, V.A. and Shumitskiy, I.O., Engineers

TITLE:

Joining of Pipe-Section Components Directly One to Another

PERIODICAL:

Avtomicheskaya svarka, 1959, Nr 9, pp 45-49 (USSR)

ABSTRACT:

Pipe components can be joined either by means of connecting beams or by direct welding. This article considers the application of the second method which is particularly suitable for pipes of a small diameter (10 to 20 cm), or those pipes which considerably differ in their diameters. In Fig 1, three examples of pipes joined at different angles are given. In research, pipes of Ø 89 x 4 mm and 129 x 4.5 mm were used as test-pieces; specifications of their chemical compositions and mechanical properties are given in Tables 1 and 2. Welding of test-pieces was performed by electrodes UONII-13/45 Ø 4 and 5 mm. To test the welded joints strength, three

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25(1)
AUTHORS:

Novikov, V.I., Candidate of Technical Sciences,
Kovtunenko, V.A., and Shumitskiy, O.I., Engineers

TITLE: Fastening of Grating Tube Elements to Multiple "Joints"

PERIODICAL: Avtomaticheskaya svarka, 1959, Vol 12, Nr 4, pp 3-13
(USSR)

ABSTRACT:

The authors describe the results of investigations on the static strength, at lower temperatures of different constructions, of fastening gratings to coil metal tube constructions. Experiments were made at especially low temperatures, -60°, because the joining should correspond to the climatic conditions in the northern and eastern parts of the country. Five samples of joints were tested for rupture (Figure 2). The result was, that for two samples of which the front plates are thin, the indicated rupture stress is low (thickness 12 mm: 25.6 and 36.0 kg/mm²) (Figure 9a,b). At samples, which had front-plates of 18 mm thickness, the indicated rupture stress reached the strength limit of the tube metal (50.5 and 53.6 kg/mm²). At the

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Fastening of Grating Tube Elements to Multiple "Joints"

sample with front-plates of 24 mm thickness, the rupture was within the tube metal. The chemical consistency of the used tube metal was given as: 0.17% C, 0.49% Mn, 0.27% Si, 0.12% Ni, 0.04% Cu, 0.035% S, 0.026% P. The measurements of the tubes were: diameter 127 mm, thickness 4.5 mm. The authors give as reference, investigations of "Proyektstal' konstruktsiya", and the Factory of Metal Constructions imeni Babuchkin, epopetrovsk (epopetrovskiy zavod metastruktseiy im. Babushkina). There are 6 photographs and 7 diagrams.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elekrosvarki im. Ye. O. Patona AN USSR (Red Banner of Labor Institute of Electric Welding imeni Ye. O. Paton, AS UkrSSR) (Novikov, Kovtunenko) "Proyektkonstruktsiya" Ministerstva Stroitel'stva USSR ("Proyektkonstruktsiya" of the UkrSSR Ministry of Construction) (Shumitskiy)

SUBMITTED: February 7, 1959
Card 2/2

BDS

L 11215-63

ACCESSION NR: AP3000143

S/0125/63/000/005/0069/0074

50

48

AUTHOR: Novikov, V. I.; Kovtunenko, V. A. (see Association 1); Shumitskiy, O. I.
(see Association 2)

TITLE: Some problems in designing and constructing an all-welded tower

SOURCE: Avtomaticheskaya svarka, no. 5, 1963, 69-74

TOPIC TAGS: Leningrad tv tower; 15KhSND steel

ABSTRACT: Methods, work, and materials used in construction of a 316.2-m high tv transmitting tower in Leningrad (completed in Dec. 1962) are described. The tower consists of a 200-m high hexagonal lattice trunk with a 60-m base and a 115.3-m high tetrahedral prism, "the antenna supporting section." Two high-speed elevators are provided. Rolled pipes up to 426 mm diameter were used. 15KhSND steel proved to be the most cold-proof and crack-resisting and, therefore, was used for principal members of the structure. All-welded prestressed design with reinforced junction plates between tubular members is claimed to be the most modern, economical, and reliable. The following organizations took part in designing and building the tower: Ukrprojektstal'konstruktsiya, Institute of Electric Welding AN UkrSSR, Lenprojekt, Dnepropetrovskiy zavod im. Babushkina (Dnepropetrovsk plant), Promstal'-konstruktsiya, and Sevzapstal'konstruktsiya. Orig. art. has: 4 figures.

Card 1/21

Inst. of Electric Welding

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001550210020-5

SHUMKIN, G.G.

"Neuroses and their treatment" by A.M.Sviadoshch. Reviewed by
G.G.Shumkin. Zhur.nevr.i psikh. 60 no.10:1390-1391 '60.
(NEUROSES) (SVIADOSHCH, A.M.) (MIRA 14:1)

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001550210020-5"

SHUMKIN, G.G.

"Studies in psychotherapy" by M.O. Lebedinskii. Reviewed by G.G.
Shumkin. Zhur.nevr.i psikh. 61 no.3:468-469 '61. (MIRA 14:7)
(PSYCHOTHERAPY) (LEBEDINSKII, M.O.)

SHUMKIN, Nikolay Yakovlevich; SIL'NOV, A.P., red.; BEYSHENOV, A.,
tekhn.red.

[Purification of water in Kirghizia] Ochistka vody v Kirgizii.
Frunze, Kirgizskoe gos.izd-vo, 1959. 59 p. (MIRA 13:4)
(Kirghizistan--Water--Purification)

30(1)

AUTHOR: Shumkin, N.Ya., Engineer (Frunze) SOV/99-59-7-5/9

TITLE: Water Cleaning Plant with Natural Flushed Filter

PERIODICAL: Gidrotehnika i Melioratsiya, 1959, Nr 7, pp 35-40 (USSR)

ABSTRACT: In some rural districts in the USSR, the underground water is found either only at considerable depths or it cannot be used owing to its chemical properties. That is why the population has to use water which is available from surface sources such as rivers, ponds, irrigation ditches etc. However, also such water often contains different impurities and sometimes even harmful bacteria. For a solution of the problem of water purification without incurring too heavy expenses for erection of purifying plants, the author proposes a new method of water filtering. The structure of this purifying plant comprises a water pressure tower, a tank for precipitating of mechanical particles, a filter, and a tank for pure water. All these elements are connected by underground water pipes. The advanced feature of this plant is the simplicity of the filter flushing.

Card 1/2

Water Cleaning Plant with Natural Flushed Filter

SOV/99-59-7-5/9

Normally, filter flushing is accomplished by a water jet delivered by special water pump. In the plant proposed by the author the flushing of filter is performed by the current of water flowing from the tank with pure water back to the filter under pressure obtained from the water pressure tower. This process takes place when needed and eliminates the necessity of using a special water pump. Furthermore, the modern water cleaning plants use filters with drainage of complicated construction. The natural flushed filter is extremely simple in its design: it consists of a series of radial canals made of concrete, natural stones or bricks coated with mortar; the filtering mass, 70 cm thick, is comprised of river sand. All materials for building the filter are locally available (stones, gravel, sand etc.). There are 2 tables and 3 diagrams.

Card 2/2

SHUMKIN, N.Ya.; KIRPICHENKO, M.M., red.; CHOTIYEV, S., tekhn. red.

[New developments at construction projects in Kirghizia]
Novoe na stroikakh Kirgizii. Frunze, Kirgizskoe gos. izd-
vo, 1961. 55 p. (MIRA 15:11)
(Kirghizistan--Construction industry)